Uzan discloses a reaction module for an automatic immunological assay apparatus (Abstract). The reaction module is a single piece of transparent plastic material comprising eight reaction wells aligned in a single row (Fig. 4 and Col. 3, lines 26-28). After a sample, reagent(s) and substrate have been deposited in a reaction well, the results of the assay are obtained by passing a light beam through the reaction well towards a detector for determining the result of the assay on the basis of the light intensity received by the detector (Col. 7, lines 6-23). The reaction modules are designed to slide between rails that define a U-shaped track and run from an automatic feed device to a device for ejecting the wells after use (Abstract).

Berthold discloses a specimen rack with insertable cuvettes for performing assays of chemiluminescence or bioluminescence (Col. 1, lines 6-8). The specimen rack is composed of a flat, substantially cuboid block of radiopaque material with a number of bores arranged in a matrix-like pattern that extend vertically through the block (Fig. 1 and Col. 4, lines 21-28). The bores are designed to hold single cuvettes or strip-racks that consist of cuvettes connected by a strip of radiopaque material (Col. 4, lines 32-38 and Col. 3, lines 46-48). The bores have a reduced cross section at their lower end thus forming an annular shoulder upon which the bottom of a cuvette rests (Col. 4, lines 47-54). Each cuvette is continuously opaquely shielded from scattering radiation from adjacent cuvettes except for the region defined by the lower opening cross section oriented towards a detector (Abstract, Col. 4, lines 47-49).

Smethers discloses a luminometer that has a platform for carrying an array of sample wells, where each well has an upper edge structure defining a window through which light can be received (Col. 2, lines 26-28 and Col. 7, lines 14-15). The wells are typically formed from opaque polystyrene (Col. 6, lines 26-27). The photodetector assembly of the luminometer includes a stage, a photodetection head having a detection aperture permitting passage of light therethrough, a means for mounting the photodetection head to the stage that permits movement of the head in a direction substantially normal to the direction of the array of sample wells and photodetector assembly movement, and a means for biasing the photodetection head toward a selected sample well so that the detection aperture is substantially isolated from light emitted from adjacent wells (Abstract).

Honzawa discloses a chemiluminescence measuring apparatus comprising a box-like housing having an opening at a top surface, a cover provided at the top surface having a

through hole that allows a distal end of a syringe containing a luminous reagent to be introduced into the interior of the housing, a hollow chamber with a side wall opening being disposed in the housing and partially enclosing a micro-sample tube containing a sample solution, and a photo-sensing unit being disposed in the housing for detecting luminescence from the micro-sample tube via the opening of the hollow chamber (Col. 1, lines 51-67 and Col. 2, lines 1-3).

None of the cited references discloses a vessel for an automated immunological assay apparatus where the walls are proof against light emitted by the chemiluminescent substance, the filling opening is a window for reading the intensity of light emitted, and the filling opening is surrounded by a planar rim against which a light-proof shoe is pressed as required by Applicant's Claims 16 and 17. Of the four references cited, only Uzan describes a reaction module for use in an automated immunological assay apparatus comprising a system for moving reaction modules along a path in the apparatus. Since the Uzan apparatus is designed specifically for absorbance measurements, the reaction module is transparent so that light can pass through each reaction well to a detector. The structure surrounding the opening of each reaction well has no specific function with respect to the detector. The openings are bound on two opposing sides by the inside faces of longitudinal rims; the remaining two sides oriented perpendicular to the first two sides are bound by flat edges that define the individual wells (Fig. 4).

Like Uzan, the apparatus in the present application also has means for moving the reaction vessels along a path in the apparatus. However, the present invention is designed to measure emission rather than absorbance. Emission studies require that ambient light be omitted from the detector during analysis. Therefore, the present application discloses a reaction vessel where the walls are proof against light emitted by the chemiluminescent substance and where a planar rim completely surrounds the opening of each reaction well against which a light-proof shoe can be pressed (Fig. 1 and page 7, lines 15-27). Smethers and Berthold both disclose vessels to be used in emission studies. Smethers discloses an array of sample wells made from opaque polystyrene (Abstract and Col. 6, lines 26-27) and Berthold discloses opaque blocks and connector strips to be used in conjunction with cuvettes (Abstract). In neither case are the vessels designed for an automated system like that in the present invention where reaction wells are analyzed while moving along a path. Although the array of sample wells in Smethers are opaque and emission is measured from the opening

of the well, one skilled in the art would have been able to make the leap from any combination of the four references to the present invention. Creating an automated system to measure emission rather than absorbance requires a sophisticated detector system and reaction vessel so that a dark chamber can be formed with each reaction well as the vessel passes by the detector during transport along a path. The reaction vessel in the present invention is uniquely designed for such transport and utilizes a photodetection system having a light-proof shoe to properly seal about the opening of an opaque reaction well. Accordingly, Claims 16 and 17 and the claims that depend therefrom, including Claims 18-21, are allowable over Uzan in light of Berthold, Smethers and Honzawa.

NEW CLAIMS 22 AND 23

Applicants have also added new independent Claims 22 and 23. Claim 22 includes the limitations:

> . . . said filling opening providing a window for measuring the intensity of light emitted by the contents of the chamber, and said filling opening being entirely surrounded by a rectangular planar rim against which a light-proof shoe is pressable.

Claim 23 includes the limitations:

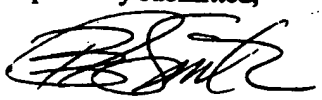
> . . . illuminating a light source external to the chamber;
> measuring the light emitted from the chamber with the light source illuminated to provide a second reading; and
> comparing the first reading and the second reading to determine the light-tightness of the chamber.

Allowance of Claims 22 and 23 respectfully solicited.

CONCLUSION

In view of the above, allowance of new Claims 16-23 is solicited in addition to the previously allowed Claims 6-11 and 15.

Respectfully submitted,



Billie Jean Smith
Reg. No. 36,940

Docket No.: 72211-9011
Michael Best & Friedrich LLP
100 East Wisconsin Avenue
Milwaukee, Wisconsin 53202-4108
(414) 271-6560

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